

HEAT TRANSFER STUDY UNIT



Experimental capabilities

- Study of thermal exchanges on a plate by forced convection.
- Influence of the inclination of the plate on the transmission of heat to the ambient air by free convection and radiation.
- Study of the different thermal conductivity of insulating materials.

PTC100



Operating principle

The PTC 100 bench allows the study of heat transfer. A heated flat plate which can be put into different positions (variable angle) allows us to quantify the thermal energy transferred to the air by convection and by radiation. Students will compare the different angles as well as the different plans (forced or natural). The plates of different materials may also be placed on the heating plate. The goal is to measure the thermal conductivity of the latter (we measure the temperature difference and the quantity of energy passing through the plate).

The robust design of this equipment makes it suitable for use in schools.

Its anodized aluminum structure on wheels with brakes gives it a very robust as well as a high flexible integration into your premises.

The manufacturing of this equipment meets European machine directive

Illustration



Electrical box including:

A white light of voltage presence

A main power switch

Electric safety



Example of materials

Technical details

1. Temperature controller

Allows to regulate the temperature of the plate
Setpoint between ambient and 70°C

2. 7" touche screen display

Allows to displays the measures of temperature
and the electrical power of heating plate

3. Sample of different insulating materials

Set of plates where their thermal conductivity is to
be determined

4. Heating plate with variable inclination

Made of a flexible heating plate for a uniform
heating with power of 100W
Very low thermal inertia

5. Fan

Variable speed for the study of forced convection

6. Insulating tubular duct

Allows the study of the chimney effect

7. Pushbutton

Allows to read the power used by the resistor on
the voltmeter and ammeter

8. Surface temperature probe

Displaying on digital display with contact
thermocouple

PTC100



Services required

- Electrical supply : 230 VAC – 50 Hz
- Electrical network : 1 phase + Neutral + Earth
- Dimensions: (LxWxH mm): 1000 x 660 x 700
- weight (Kg): 40

Note : if the equipment installation is operated by our staff, all supplies and exhaust connections required must stand at less than 2m from the machine

Documentation

- User's manual
- Pedagogical manual
- Technical documentation of the components
- Lab exercises
- Software of supervision
- Certificate of conformity CE

Monitoring: Parameter setting, Plot of curve

The bench is also equipped as standard with a monitoring and configuration software. The connection towards the PC is made via WIFI. The software is divided into two parts

PICTURE MACHINE :



We found in this window the photo of the machine with the location of various measures of the process and their values.

GRAPHICS :

We find in this graph window, the possibility of drawing the measurement curves as a function of the time by selecting the desired quantities.

